

CLAIMS

1. A weapon effect simulation system comprising a fire simulation system and at least one hit simulation system, wherein the fire simulation system comprises
- 5 - means (2) for transmitting electromagnetic waves to simulate real ammunition from a weapon and
- means (21) for including information in the electromagnetic waves, and said at least one hit simulation system comprises
- means (34) for receiving the transmitted electromagnetic waves and
- 10 - means (33) for determining whether a target has been hit based on the received electromagnetic waves,
- characterized in** that the fire simulation system further comprises means (17) for calculating the imagined trajectory of the simulated ammunition and means (20) for determining the geographical position of the weapon, and in that the means (21) for including information in the electromagnetic waves are arranged so as to include
- 15 information related to coordinates in the three-dimensional space for the calculated ammunition trajectory.
2. A weapon effect simulation system according to claim 1, **characterized in** that the
- 20 means (2) for transmitting electromagnetic waves comprise a laser transmitter (12) arranged so as to transmit laser radiation with at least one beam lobe.
3. A weapon effect simulation system according to claim 2, **characterized in** that the
- 25 means (2) for transmitting electromagnetic waves further comprise a radio transmitter (23) arranged so as to transmit radio waves.
4. A weapon effect simulation system according to claim 3, **characterized in** that the
- 30 means (33) for determining whether the target has been hit are arranged so as to determine target hits based primarily on the information in the laser radiation and secondarily on the information in the radio waves.
5. A weapon effect simulation system according to claim 1, **characterized in** that the
- 35 means (2) for transmitting electromagnetic waves comprise a radio transmitter (23) arranged so as to transmit radio waves.

6. A weapon effect simulation system according to claim 1, **characterized in** that the means (21) for including information in the electromagnetic waves are arranged so as to continuously include, based on the calculated trajectory, information
5 concerning the current trajectory position of the simulated ammunition.
7. A weapon effect simulation system according to claim 1, **characterized in** that the means (21) for including information in the electromagnetic waves are arranged so as to include, during a period of time that is shorter than the flight time of the real
10 ammunition and based on the calculated trajectory, information concerning the trajectory positions of the simulated ammunition.
8. A weapon effect simulation system according to claim 1, **characterized in** that the means (17) for calculating the trajectory of the simulated ammunition are arranged
15 so as to determine the impact point or burst point of the ammunition, and in that the information related to the calculated ammunition trajectory contains the impact point or burst point.
9. A weapon effect simulation system according to claim 1, **characterized in** that the fire simulation system comprises a transmitter (13) arranged so as to transmit
20 information regarding the geographical position of the weapon, and in that a minimum of one of the hit simulation systems comprises a receiver (25) arranged so as to receive said position data.
- 25 10. A weapon effect simulation system according to claim 9, **characterized in** that the information related to the calculated ammunition trajectory is determined relative to the geographical position of the weapon.
11. A weapon effect simulation system according to claim 1, **characterized in** that said
30 at least one hit simulation system comprises means (32) for determining the geographical position of the target.
12. A weapon effect simulation system according to claim 11, **characterized in** that at least one of the hit simulation systems comprises a transmitter (26), and in that the
35 fire simulation system comprises a receiver (14) arranged so as to receive

information from the transmitter (26) of the hit simulation system.

- 5 13. A weapon effect simulation system according to claim 12, **characterized in** that the transmitter (26) is arranged so as to transmit information regarding the geographical position of the target.
- 10 14. A weapon effect simulation system according to claim 13, **characterized in** that the calculating means (17) are arranged so as to determine which target has been hit, and in that the information related to the calculated ammunition trajectory includes information that identifies the determined target.
- 15 15. A weapon effect simulation system according to claim 12, **characterized in** that the transmitter (26) is arranged so as to transmit a hit message upon determination of a hit.
16. A weapon effect simulation system according to claim 15, **characterized in** that the receiver (25) for a hit simulation system that has not determined a hit, the so-called "secondary object", is arranged so as to receive the transmitted hit message.
- 20 17. A weapon effect simulation system according to claim 16, **characterized in** that the means (33) of the secondary object for determining hits are arranged so as to decide upon receiving hit messages whether the secondary object has been hit.
- 25 18. A weapon effect simulation system according to claim 15, **characterized in** that the means (2) for transmitting electromagnetic waves are operatively connected with the receiver (14) of the fire simulation system and arranged so as to break off the simulation upon receiving the hit message.
- 30 19. A weapon effect simulation system according to claim 15, **characterized in** that the fire simulation system comprises means for displaying hit locations and effects based on received hit messages.
- 35 20. A weapon effect simulation system according to claim 19, **characterized in** that the means for displaying hit locations and effects are arranged so as to display hit locations and effects visually.

21. A weapon effect simulation system according to claim 1, **characterized in** that the fire simulation system is disposed at a weapon.
- 5 22. A weapon effect simulation system according to claim 1, **characterized in** that the means (20) arranged so as to determine the geographical position of the weapon have a geographical position that is separate from the geographical position of the means (2) arranged so as to transmit electromagnetic waves for simulating real ammunition.
- 10 23. A weapon effect simulation system according to claim 1, **characterized in** that said at least one hit simulation system is disposed in connection with a respective target.
- 15 24. A weapon effect simulation system according to claim 1, **characterized in** that the means (33) for determining whether a target has been hit are arranged so as to determine the hit location on the target.
- 20 25. A player, e.g. in the form of a vehicle or a soldier, equipped with a fire simulation system according to claim 1 and a hit simulation system according to claim 1, wherein the means (33) of the hit simulation system for determining whether a target has been hit are operatively connected with the means (2) of the fire simulation system for transmitting electromagnetic waves and arranged so as to break off the simulation in the event that a hit is determined corresponding to damage or injury that renders continued firing impossible.
- 25 26. A fire simulation system for weapon effect simulation systems, comprising means (2) for transmitting electromagnetic waves for simulating ammunition from a weapon and means (21) for including information in the electromagnetic waves, **characterized in** that the fire simulation system further contains means (17) for
- 30 calculating the imagined trajectory of the ammunition and means (20) for determining the geographical position of the weapon, and in that the means (21) for including information in the electromagnetic waves are arranged so as to include information related to coordinates in the three-dimensional space for the calculated ammunition trajectory.
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27. A method for simulating the effect of a weapon on one or more potential targets, wherein

- electromagnetic waves for simulating ammunition from the weapon are modulated with information,
- 5 - the modulated electromagnetic waves are transmitted for reception by the potential targets, whereupon a determination is made upon reception for each respective target as to whether the target has been hit, based on the received electromagnetic waves,

10 **characterized in** that the imagined trajectory of the simulated ammunition is calculated, and in that the information that is modulated with the electromagnetic waves includes information related to coordinates in the three-dimensional space for the calculated ammunition trajectory.